

<b>Contact Person</b>	Shawn Nelson	<b>Revision</b>	0
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## Ames Laboratory Baseline Needs Assessment

This Baseline Needs Assessment (BNA) addresses the requirements of Section 3.b(8) of Chapter II of Department of Energy (DOE) Order 420.1B. The criterion in Section 4.9 of DOE G 420.1-3, Implementation Guide for DOE Fire Protection and Emergency Services Programs was used to develop this BNA. The purpose of the assessment is to ensure that an appropriate level of fire protection, emergency medical and hazardous materials response capabilities are provided to the Ames Laboratory.

### 1.0 APPROVAL RECORD

Reviewed by: Amy Tehan, Document Control Coordinator  
 Approved by: Tom Wessels, Manager, Environment, Safety, Health & Assurance  
 Approved by: Mark Murphy, Chief Operations Officer  
 Approved by: Deb Covey, Associate Laboratory Director for Sponsored Research Administration  
 Approved by: Duane Johnson, Chief Research Officer  
 Approved by: Tom Lograsso, Interim Deputy Director  
 Approved by: Alex King, Director

### 2.0 REVISION/REVIEW INFORMATION

The revision description for this document is available from and maintained by the author.

### 3.0 PURPOSE AND SCOPE

DOE Order 420.1B, Facility Safety, requires the Ames Laboratory to complete a Baseline Needs Assessment (BNA) or an evaluation in documented form of comparable scope. This assessment is coordinated effort involving the Ames Laboratory's Fire Safety Committee, and the Ames Site Office (AMSO) and the off-site emergency services organizations. This document shall be provided to the Ames Fire Department and the AMSO. Since the Ames Laboratory does not maintain a staffed fire department or fire brigade, the intent of this BNA shall define the necessary capabilities in order to achieve a timely and effective response to fire and related events and to establish a process for periodic review and update.

This BNA proceeds with the basic assumption that there is only one emergency incident (such as a fire) occurring on-site, with a casualty requiring emergency medical assistance. However, this also describes how the fire department would respond if a second incident occurred while the first was underway. The second response capability is based on documented mutual aid agreements and utilization of the off-duty personnel.

This BNA is in conformance with applicable NFPA standards as well as supplementary requirements and guidance developed by DOE. It includes organizational responsibilities, collateral duties, facility hazards, response time requirements, personnel levels, required apparatus and equipment.

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## 4.0 CONFORMANCE AND REQUIREMENTS

### 4.1. Organizational Responsibilities

Fire protection responsibilities fall under the authority of the Ames Laboratory Fire Safety Committee (FSC), a sub-committee of the Safety Review Committee (SRC). The FSC reports to the SRC, which reports to the Ames Laboratory Director. FSC membership is assigned to 4 members: three voting members and one attending member who will vote as needed in the absence of a voting member. The Chair acts as the liaison with the SRC. The FSC is the Authority Having Jurisdiction (AHJ) for daily operations. The AMSO is the AHJ for equivalencies and exemptions.

In the event of a fire or a hazardous materials (HAZMAT) response, the Ames Fire Department (AFD) would assume lead as Incident Command.

Mary Greeley Medical Center is the medical provider in the event of casualty, though the AFD can provide basic life support (non-transport) until the arrival of Mary Greeley Medical Center ambulance arrives.

### 4.2. Facility Hazards

The Ames Laboratory is a government-owned, contractor-operated national laboratory of the United States Department of Energy's Office of Science. Iowa State University (ISU) is the contractor and the Laboratory is physically located on the University's campus. The Ames Laboratory is a basic energy science laboratory conducting mainly bench top scale activities.

Ames Laboratory operates in government-owned buildings that are located on approximately 10 acres of University land that has been leased to the Federal government on a long-term (99 year) basis. The Laboratory occupies approximately 325,000 gross square feet in government-owned buildings. Over 70% of this space is contained in 3 major research-use buildings built between 1949 and 1960. An office-use building (less than 15% of total) was built in 1994, which consolidated most administrative and support functions in one location for improved efficiency, allowing space in other buildings to be redirected to research activities. The balance of the space is contained in several small auxiliary buildings constructed primarily during the 1960s. These buildings provide space for support functions such as storage, records handling and storage, material receiving areas, warehouse functions and shop facilities. The Laboratory is integrated into the ISU campus in such a way that ISU provides and maintains the site-wide infrastructure (e.g. heating plant, chilling plant, roads, etc.). In addition to space in the Federally-owned buildings, the Laboratory also utilizes space in University-owned buildings adjacent to the main site for research activities. ISU is responsible for maintaining non Ames Laboratory buildings. The City of Ames Fire Department responds to ISU buildings and Ames Lab building in the same manner. ISU does not have a dedicated fire department.

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#### 4.3. Response Time

The Fire Department typically can respond to Ames Laboratory in less than 5 minutes. In the event of a hazardous materials response beyond the capability of the City of Ames, the Des Moines HAZMAT Group can respond in approximately 40 minutes (via an established mutual aid agreement). The Fire Department also has mutual aid agreements with the surrounding communities.

Based on the physical locations of the fire stations, the activity risk, the type of building construction (Type I construction, defined by NFPA 220), the majority of the Ames Laboratory buildings having early detection (smoke and heat detectors) and automatic fire suppression (sprinklers), and the use of a Supervised Alarm System, the response time of approximately 5 minutes is acceptable.

#### 4.4. Personnel Levels

The Ames Fire Department is a professional fire department that has 55 uniformed personnel (one Chief Officer, two Deputy Chiefs, three Captains, nine Lieutenants) and one administrative assistant spread over three stations.

##### *Station One - Headquarters*

1300 Burnett Ave  
Ames, Iowa 50010  
~1.39 Miles northeast

##### *Station Two*

132 Welch Avenue  
Ames, Iowa 50014  
~0.57 miles south

##### *Station Three*

2400 S. Duff Avenue  
Ames, Iowa 50010  
~4.8 miles southeast

The services provided include:

- Fire
  - Prevention
  - Suppression
  - Education
- EMS (basic life support non-transport)
- Hazmat
- Vehicle Extrication
- Trench Rescue
- Confined Space Rescue (limited)
- High angle/ Low Angle Rope Rescue

DOE Order 420.1B references NFPA 1500, Standard on the Fire Department Occupational Safety and Health. In this standard, the minimum number of trained firefighters necessary to begin interior structural fire-fighting should be five. The AFD maintains a minimum of 12 trained firefighters.

The City of Ames Fire Department personnel levels are adequate to achieve a timely and effective response in the event of fire or other related event.

#### 4.5. Available Apparatus and Equipment

- 4 Engines (pumpers)
- 1 Ladder Truck
- 2 Medium Rescue Trucks
- 1 Hazmat Truck
- 1 Rescue (EMS) Vehicle
- 1 Command Vehicle
- 3 Administrative Vehicles
- 1 Rescue Boat

Minimal repairs and maintenance are completed in house. Repairs above the competence of the in-house personnel are performed by the distributor. Leased vehicles are used when trucks are out for major service.

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The City of Ames Fire Department is adequately equipped to achieve a timely and effective response in the event of a fire or another related event.

#### **4.6. Training, Physical Fitness, and Medical Programs**

Ames Laboratory does not maintain a staffed Fire Department or Fire Brigade. That service is provided by the City of Ames Fire Department. All of their uniformed personnel are trained to either Fire Fighter 1 or Fire Fighter 2 Level. Their First Responders are trained to Responder D Level (Basic Life Support – BLS). The majority of the staff are also trained as Hazmat Technicians.

The Fire Department annually performs a physical exercise (drill) on the campus of Iowa State University (occasionally at Ames Laboratory).

Member(s) of the Fire Department are invited to participate in physical exercises and table top exercises performed by the Laboratory's Emergency Preparedness Committee, contributing to the awareness of off-site staff to local events. This invitation is commonly attended by at least one member (typically a Captain) of the Fire Department.

Ames Laboratory invites the Ames Fire Department to tour the facility annually, to allow new officers to gain a pre-incident view of the facility, and to familiarize experienced officers with the site and building(s).

The City of Ames Fire Department is adequately trained to achieve a timely and effective response in the event of fire or other related event.

#### **4.7. Pre-fire Plans**

The Fire Department is developing Pre-fire Plans for all occupied buildings in the city of Ames and 5 mile radius during the next three years. The Pre-fire Plans include emergency shut-offs, emergency points of contact, building plans, listing of unique hazards, fire hose connections, locations of Post Indicator Valves (PIVs), etc. To aid in the development of fire plans, Ames Laboratory provides PDFs of floor plans.

#### **4.8. Hot Work Permits**

Hot Work permits are described in the Ames Laboratory Safety Manual. Permitting is performed by Environment, Safety, Health, and Assurance (ESH&A) and Facilities and Engineering Services (FES) with the majority of hot work being performed by Facilities and Engineering Services in the completion of repair and remodeling efforts. Permits are approved by staff in FES and ESH&A who have been trained in hazards recognition and are familiar with the typical hazards and procedures involved. Permits are presented to Plant Protection Section (PPS) personnel, who can bypass the appropriate fire annunciation for the building involved with the permit. The individual requesting the bypass must remain in the building and in radio contact until the bypass is cancelled. This practice is in place to prevent false fire evacuations by occupants. Alarm bypass procedures are maintained in PPS.

#### **4.9. Unwanted and Waste Chemicals**

Unwanted chemicals are collected weekly and transferred to B55 Spedding Hall, where organic solvents are bulked into 55-gallon drums and stored in rated flammable liquid

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storage cabinets. All unwanted chemicals are processed out by a chemical waste contractor every 180 days. B55 Spedding has a smoke detector installed and is sprinkled. The door is locked at all hours, with the door monitored after hours.

#### **4.10. Fire Inspections**

Fire inspections of the site are conducted daily by the PPS officers during their tours of the facility, during the Program/Department and Independent Walk-Throughs of the facility conducted annually, and during the Readiness Review process for activities, conducted every five years. Each process has documented provisions for remedial actions to correct conditions that might increase fire risk.

#### **4.11. System Impairments**

Procedures for sprinkler system impairments reside in the Plant Protection Section, and address the need for posted signage and notification of interested parties (including AFD), both prior to the impairment and after return-to-service.

#### **4.12. Central Station Monitoring**

The Plant Protection Section is a six-person, uniformed, unarmed force divided into three shifts of two people each. Shifts are based on straight eight work hours, with the on-coming officer(s) relieving the off-going officer(s) to maintain continuity. On-shift assignments are staggered to allow alternate week-ends off, with two-officer days typically occurring on week days. Primary responsibilities include attending to the central station to observe and respond to fire and security alarms, and touring the facility to observe and report conditions. Additional responsibilities involve reacting to alarms or observations as the site's temporary Emergency Coordinator until appointed personnel can respond to the scene.

All valves for the sprinkler systems are supervised (electronically monitored) via the Simplex central station by PPS, or (as is the case of the Post Indicator Valves) are padlocked and inspected weekly by PPS.

#### **4.13. Radio Communication**

Ames Laboratory is provided on-site VHF stations and with two (2) radios that ISU DPS utilize in the event of the need to communicate directly.

#### **4.14. Insurance Rating Organization (ISO)**

The City of Ames Fire Department maintains an ISO Rating of 3 (from a 1 to 10 scale with 1 being the highest rating).